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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/673,860
Filing Date: September 30, 2003
Appellant(s): KIKUCHI ET AL.

Shelly Guest Cermak
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/30/05 appealing from the Office action mailed 6/3/05.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3, 4, 7, 8, 10 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The rejection is based on the Guidelines for the Examination of Patent Applications under the 35 U.S.C. 112, first paragraph "Written Description published in the Federal Register (Volume 66, Number 4, Pages 1099-1111). Claim 1 is drawn to a

method for producing a heterologous protein comprising culturing a *Corynebacterium glutamicum* AJ12036 bacterium or mutant thereof wherein said bacterium or mutant thereof is able to secrete the heterologous protein at least 2-fold higher than C. glutamicum ATCC13869 having the same genetic expression construct. Claim 3 specifies that the mutant does not produce a cell surface protein. Claim 4 specifies that the signal peptide comprises a signal peptide of a cell surface protein from a coryneform bacterium, and claim 7 recites that the signal peptide is from a cell surface protein from *C. ammoniagenes*. Dependent claims 10 and 11 recite culture conditions. The specification discloses that mutants may include any strains obtained by mutagenesis and selection procedures for increased secretory properties (page 10 of the specification). The specification further discloses strains that do not produce a surface protein (page 10). The specification further discloses that the signal peptide of any surface protein of Coryneform bacteria is encompassed by the signal peptide recited in the claims. Claims 1, 3, 4, 7, 8, 10 and 11 are genus claims in terms of (1) a method using C. glutamicum AJ12036 or any mutant thereof which secretes a heterologous protein at levels 2-fold higher when compared to wild type *C. glutamicum* ATCC 13869 (claims 1, 3, 4, 7, 8, 10, 11); (2) a method using AJ12036 or any mutant thereof which secretes a heterologous protein at levels 2-fold higher when compared to wild type *C. glutamicum* ATCC 13869, and which does not produce a cell surface protein (claim 3). Thus, the claims encompass a broad class of methods using mutant strains of coryneform bacterium having increased secretory properties, and said mutants which also do not have a surface protein. The disclosure is not deemed to be descriptive of

the complete structure of a representative number of species encompassed by the claims as one of skill in the art cannot envision all the methods utilizing the encompassed mutant coryneform bacteria, based on the teachings of the specification. While the specification provides broad guidance on methods of mutagenesis and selection which may be used to isolate mutant bacteria, there is no disclosure of the precise mutations of the AJ12036 coryneform bacteria useful for obtaining and/or maintaining the recited increased secretion properties. There is no structure-function analysis on the disclosed strain of *C. glutamicum* AJ12036, or characterization of the mutation(s) contained therein, which result in the desired properties. It cannot be determined what mutations would need to be present, or which gene sequences which would need to be maintained, in order to result in the claimed increased secretion properties in mutants of strain AJ12036. The recitation in the claims and specification of methods utilizing mutant bacterial strains which are waiting to be discovered, does not satisfy the written description requirement.

Therefore, the specification does not describe the claimed method utilizing mutants of coryneform bacterial strain AJ12036 having increased (2-fold over wild type) secretory properties in such full, clear, concise and exact terms so as to indicate that applicant had possession of the invention recited in the claims at the time of filing the present application.

Vas-Cath V. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of *the invention*. The invention is, for purposes of the 'written

description' inquiry, *whatever is now claimed.*" (See page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is now claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of methods utilizing mutant coryneform bacteria, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation or identification. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Col. Ltd.,* 18USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only the disclosed methods using the strain AJ12036, but not the full breadth of the claims, meets the written description provision of 35 U.S.C. 112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that written description provision of 35 U.S.C. 112 is severable from its enablement provision (see page 1115).

(10) Response to Argument

Appellants have presented arguments regarding the legal standard for the written description requirement (page 5 of the Brief), with which the examiner does not take issue.

Appellants have further argued at pages 5-8 of the brief that not every mutant strain of AJ12036 is encompassed by the claims, but rather, only those which retain the activity of being able to secrete heterologous proteins at the stated amount. Appellants further state that since the strain AJ12036 is known to have the property or activity of increased secretion of proteins, one would merely need to recognize mutants derived from AJ12036 which have retained this activity. It is agreed that the limitation of increased secretion by encompassed mutants of AJ12036 is present in the claims, and therefore not every mutant strain of AJ12036 is encompassed. However, it is maintained that there is not an adequate description of the mutant strains that **are** encompassed, i.e. mutants of strain AJ12036 which retain the ability to secrete the recited heterologous protein at levels at least 2-fold higher than the parent, wild type strain having the same genetic expression construct. The genetic structure (i.e. the genetic alteration) which is responsible for the increased secretion of proteins in AJ12036, which distinguishes it from the parent wild type strain ATCC13869, has not been disclosed. Mutants of this AJ12036, which retain the ability of the parent strain to have increased secretion of proteins, therefore, have not been described in terms of their genetic structure. One of skill in the art cannot envision the genetic alterations which would leave intact this ability to secrete proteins at a higher level than a wild type strain. The ability to isolate, or discover, new mutants of the AJ12036 strain, is not at

issue. Rather, an adequate written description such that it would be clear that appellants had possession of the invention claimed is needed. This is lacking, since there is no structural information regarding such mutants, much less a structure/function analysis of the genetic material responsible for the claimed activity. Appellants further state that a representative number of species encompassed by the genus must be implicitly or explicitly disclosed in the specification to adequately describe a claimed genus (page 6). Appellants then state that they were in possession of the necessary common attributes or features of the elements possessed by the members of the genus, since the genus contains only mutants of the AJ12036 strain (page 7). However, it is maintained that one would not be able to envision the identity of such mutants, since one does not even know the starting structure, i.e. the genetic sequence or alteration responsible for the activity of increased secretion in AJ12036, from which mutants are derived. While appellant states that they believe "that a mutant derived from AJ12036 will not lose the activity of being able to highly secrete heterologous protein. This is because a random mutation would rarely introduce a mutation in the region responsible to this secretion capacity" (page 8), such a belief is not based on factual evidence, especially since it cannot be determined how frequently a random mutation would affect a genetic structure which has not been characterized as far as extent of genetic differences, number of genes involved, etc. Further, it is noted that the term "mutants" is not limited to a single random mutation event, i.e. a single nucleotide change; the large scope of this term, which could include any alteration including deletions or insertions of any size, and any number of alterations of genetic sequence, further

emphasizes that there is not adequate written description for the genus. One could not envision which regions of the bacterial genome could be changed or altered without altering the secretion activity, since one does not know the identity of the structure responsible for said activity which must be maintained for the claimed activity. For these reasons, appellants arguments are not found convincing.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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